

(d) a cell that has been altered to contain a fragment of the nucleic acid of (a), (b), or (c), wherein the cell expresses the polypeptide encoded by said fragment and wherein the encoded polypeptide binds to the CryIA(b) toxin and wherein the fragment is about the same length as the protein fragment encoded by a Bam-Sac nucleic acid molecule;

(e) an isolated BT-toxin receptor having an amino acid sequence of SEQ ID NO:2;

(f) an isolated BT-toxin receptor that is encoded by a nucleic acid molecule that hybridizes to the polynucleotide sequence of SEQ ID NO:1 under stringent conditions, said receptor having the same sequence as an insect BT toxin receptor that occurs in nature;

(g) an isolated BT-toxin receptor encoded by a nucleic acid molecule that hybridizes to the polynucleotide sequence of SEQ ID NO:1 under stringent conditions, wherein the receptor encoded by the nucleic acid binds to the CryIA(b) toxin; and

(h) an isolated fragment of the BT-toxin receptor of (e), (f), or (g), wherein said fragment binds to the CryIA(b) toxin and wherein the fragment is about the same length as the protein fragment encoded by a Bam-Sac nucleic acid molecule; and

(ii) determining whether said agent binds to said BT-toxin receptor; wherein the stringent conditions comprise:

50% formamide, 0.1% bovine serum albumin, 0.1% Ficoll, 0.1% polyvinylpyrrolidone, 50 mM sodium phosphate (pH 6.5), 750 mM NaCl, and 75 mM sodium citrate at 42°C, with washes at 42°C in 0.2x SSC and 0.1% SDS;

or

50% formamide, 5x SSC, 50 mM sodium phosphate (pH 6.8), 0.1% sodium pyrophosphate, 5x Denhardt's solution, sonicated salmon sperm DNA (50 µg/ml), 0.1% SDS, and 10% dextran sulfate at 42°C, with washes at 42°C in 0.2x SSC and 0.1% SDS,

or

0.015M NaCl, 0.0015M sodium citrate, and 0.1% SDS at 50°C.

(Amended) The method of claim 1, wherein said eukaryotic cell is an insect cell.

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5. (Amended) A method to identify agents that block the binding of a BT-toxin to a BT-toxin receptor, said method comprising the steps of:

(i) contacting an agent, in the presence and absence of a BT-toxin, to a BT-toxin binding receptor selected from the group consisting of

(a) a cell that has been altered to contain a nucleic acid molecule that encodes a BT toxin receptor having the amino acid sequence of SEQ ID NO:2 and expresses said receptor;

(b) a cell that has been altered to contain a nucleic acid molecule encoding a BT-toxin receptor that hybridizes to the polynucleotide sequence of SEQ ID NO:1 under stringent conditions, wherein said cell expresses said receptor and wherein said receptor has the same sequence as an insect BT toxin receptor that occurs in nature;

(c) a cell that has been altered to contain a nucleic acid molecule encoding a BT-toxin receptor that hybridizes to the polynucleotide sequence of SEQ ID NO:1 under stringent conditions, wherein the cell expresses the receptor and the receptor encoded by the nucleic acid binds to the CryIA(b) toxin;

(d) a cell that has been altered to contain a fragment of the nucleic acid of (a), (b), or (c), wherein the cell expresses the polypeptide encoded by said fragment and wherein the encoded polypeptide binds to the CryIA(b) toxin and wherein the fragment is about the same length as the protein fragment encoded by a Bam-Sac nucleic acid molecule;

(e) an isolated BT-toxin receptor having an amino acid sequence of SEQ ID NO:2;

(f) an isolated BT-toxin receptor that is encoded by a nucleic acid molecule that hybridizes to the polynucleotide sequence of SEQ ID NO:1 under stringent conditions, said receptor having the same sequence as an insect BT toxin receptor that occurs in nature;

(g) an isolated BT-toxin receptor encoded by a nucleic acid molecule that hybridizes to the polynucleotide sequence of SEQ ID NO:1 under stringent conditions, wherein the receptor encoded by the nucleic acid binds to the CryIA(b) toxin; and

(h) an isolated fragment of the BT-toxin receptor of (e), (f), or (g), wherein said fragment binds to the CryIA(b) toxin and wherein the fragment is about the same length as the protein fragment encoded by a Bam-Sac nucleic acid molecule; and

(ii) determining whether said agent blocks the binding of said BT-toxin to said BT-toxin receptor;

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cont.

wherein the stringent conditions comprise:

50% formamide, 0.1% bovine serum albumin, 0.1% Ficoll, 0.1% polyvinylpyrrolidone, 50 mM sodium phosphate (pH 6.5), 750 mM NaCl, and 75 mM sodium citrate at 42°C, with washes at 42°C in 0.2x SSC and 0.1% SDS;

or

50% formamide, 5x SSC, 50 mM sodium phosphate (pH 6.8), 0.1% sodium pyrophosphate, 5x Denhardt's solution, sonicated salmon sperm DNA (50 µg/ml), 0.1% SDS, and 10% dextran sulfate at 42°C, with washes at 42°C in 0.2x SSC and 0.1% SDS,

or

0.015M NaCl, 0.0015M sodium citrate, and 0.1% SDS at 50°C.

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cell.

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(Amended) The method of claim 37, wherein said eukaryotic cell is an insect

Sub D3  
C6

13. (Amended) A method to produce BT-toxin receptor protein, or a fragment thereof, said method comprising the steps of:

i) culturing a cell that has been altered to contain a nucleic acid molecule that encodes a BT-toxin receptor protein, or BT-toxin binding fragment thereof, wherein said cell has been altered to contain a nucleic acid molecule selected from the group consisting of

(a) a nucleic acid molecule that encodes the amino acid sequence of SEQ ID NO:2;

(b) a nucleic acid molecule encoding a BT-toxin receptor that hybridizes to the polynucleotide sequence of SEQ ID NO:1 under stringent conditions, said receptor having the same sequence as an insect BT toxin receptor that occurs in nature;

(c) a nucleic acid molecule encoding a BT-toxin receptor that hybridizes to the polynucleotide sequence of SEQ ID NO:1 under stringent conditions, wherein the receptor encoded by the nucleic acid binds to the CryIA(b) toxin; and

(d) a fragment of the nucleic acid of (a), (b), or (c), wherein said fragment binds to the CryIA(b) toxin and wherein the fragment is about the same length as the protein fragment encoded by a Bam-Sac nucleic acid molecule; and

ii) isolating said BT-toxin receptor protein or fragment;

wherein the stringent conditions comprise:

50% formamide, 0.1% bovine serum albumin, 0.1% Ficoll, 0.1% polyvinylpyrrolidone, 50 mM sodium phosphate (pH 6.5), 750 mM NaCl, and 75 mM sodium citrate at 42°C, with washes at 42°C in 0.2x SSC and 0.1% SDS;

or

50% formamide, 5x SSC, 50 mM sodium phosphate (pH 6.8), 0.1% sodium pyrophosphate, 5x Denhardt's solution, sonicated salmon sperm DNA (50 µg/ml), 0.1% SDS, and 10% dextran sulfate at 42°C, with washes at 42°C in 0.2x SSC and 0.1% SDS,

or

0.015M NaCl, 0.0015M sodium citrate, and 0.1% SDS at 50°C.

C6  
CONT.

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C7      11. (Amended)      The method of claim 14, wherein said eukaryotic cell is an insect cell.

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